Food and Drug Administration
10903 New Hampshire Avenue
Silver Spring, MD 20993-0002
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510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY

I Background Information:

A 510(k) Number

k191462

B Applicant

MFB Fertility, Inc.

C Proprietary and Established Names

Proov Test

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
QKE	Class I, meets the limitation to the exemption 21 CFR 862.9(a) and 862.9(b)	21 CFR 862.1620 - Progesterone Test System	CH - Clinical Chemistry

II Submission/Device Overview:

A Purpose for Submission:

New Device

B Measurand:

Pregnanediol Glucuronide (PdG)

C Type of Test:

Qualitative, lateral flow competitive immunoassay

III Intended Use/Indications for Use:

A Intended Use(s):
See Indications for Use below.

B Indication(s) for Use:
The Proov Test is intended for the detection of pregnanediol glucuronide (PdG, the major urine metabolite of progesterone) and can be used as an aid for confirmation of ovulation.

C Special Conditions for Use Statement(s):

OTC - Over The Counter

D Special Instrument Requirements:

Not applicable

IV Device/System Characteristics:

A Device Description:

Each Proov test kit contains seven Proov test strips that are individually sealed. Each test strip consists of anti-PdG antibody and antigen, nitrocellulose membrane, colloidal gold conjugate pad, and a sample pad.

B Principle of Operation:

The specific analyte tested by the Proov Test is pregnanediol glucuronide (PdG), a progesterone metabolite. The Proov Test is intended for measuring PdG in first morning urine during the non-menstruating phases of the monthly female reproductive cycle. The Proov Test is a disposable lateral flow test strip, consisting of a test area and control area. The urine sample is applied to the strip by dipping. The sample moves by lateral flow into the test area, and then the control area. The test area has PdG-specific reagents impregnated on it to detect the present of hormone metabolites in the urine. The control area has antibodies impregnated to be used as internal control for proper assay function. The test strip is intended for use outside the body (in vitro diagnostic use) and provides qualitative results with a single red line indicating a positive result for PdG and two red lines indicating a negative result for PdG in urine.

V Substantial Equivalence Information:

A Predicate Device Name(s):
Luminescent Immunoassay Kit For The Detection Of Progesterone In Saliva

B Predicate 510(k) Number(s):
K040923

C Comparison with Predicate(s):

Device & Predicate Device(s):	K191462	K040923
Device Trade Name	**Proov Test**	**IBL Progesterone LIA Test**
General Device Characteristic Similarities		
Indications for Use	Intended for the confirmation of ovulation.	Same
General Device Characteristic Differences		
Sample Type	Urine	Saliva
Analyte	Pregnanediol glucuronide (PdG)	Progesterone
Type of Test	Qualitative	Quantitative
Technology	Lateral Flow Immunoassay	Luminescent ELISA Immunoassay
Test environment	Over-the-counter home use	Prescription Use

VI Standards/Guidance Documents Referenced:

None

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

1. Precision/Reproducibility:

Precision was evaluated using analyte-free urine specimens spiked with varying concentrations of PdG (0, 2.5, 3.75, 5, 6.25, and 7.5 µg/ml). PdG concentrations were confirmed using a validated PdG ELISA assay. Each urine sample was tested using three device lots of device, by three operators, in duplicate, across five consecutive days, for a total of 90 measurements per sample. Results are shown in the table below:

PdG Level (µg/mL)	Percent from Cutoff	Positive	Negative	% Positive
0	-100%	0	90	0%
2.5	-50%	0	90	0%
3.75	-25%	0	90	0%
5	Cutoff	41	49	46%
6.25	+25%	90	0	100%
7.5	+50%	90	0	100%

2. Linearity:

Not applicable since this is a qualitative device.

3. Analytical specificity/Interference:

Potential interference from exogenous interferents and potential cross-reactivity from endogenous substances was evaluated by dipping Proov Tests strips from three different lots into analyte-free urine specimens containing 6.25 µg/mL or 0 µg/mL PdG or specimens containing 6.25 µg/mL or 0 µg/mL PdG that were spiked with different interfering substances. In addition, four levels of pH and three specific gravity conditions were evaluated as potential interferences for the device. Three replicates were performed for each condition assayed. The sponsor stated that interference was non-significant if negative specimens all correctly read negative and the positive specimens all correctly read positive. Results are shown below:

Substance	**Highest Concentration Tested Without Significant Interference or Cross-Reactivity**
Luteinizing Hormone (LH)	600 mIU/mL
Human chorionic gonadotropoin (hCG)	1000 mIU/mL
Progesterone	100 ng/mL
Pregnanediol	60 µg/mL
Estrone-3-Glucuronide	600 ng/mL
Acetaminophen	20 mg/dL
Ascorbic Acid	20 mg/dL
Caffeine	20 mg/dL
Glucose	2 mg/dL
Ampicillin	20 mg/dL
Ketone	1%
Acetylsalicylic Acid	20 mg/dL
Atropine	20 mg/dL
Gentisic Acid	20 mg/dL
Hemoglobin	1 mg/dL
Tetracycline	20 mg/dL
Nitrite Positive	1%
Phenothiazine	20 mg/dL
Ethanol	1%
Albumin	100 mg/dL
pH	4.25, 5, 8, 9
Specific Gravity	1.000, 1.015, 1.025

Hook Effect

The sponsor tested several high PdG concentrations (50 µg/mL, 100 µg/mL, 1 mg/mL) in their interference study to evaluate a potential Hook effect for their device. No discrepant results were observed.

4. Assay Reportable Range:

   Not applicable since this is a qualitative device.

5. Traceability, Stability, Expected Values (Controls, Calibrators, or Methods):

   Traceability

   The Proov Test is traceable to a commercially available purified PdG standard.

   Stability/Shelf Life:

   Accelerated and real-time stability protocols were reviewed and found to be adequate to support that Proov devices are stable for 24 months when stored in the sealed foil pouch at 4-30°C (38-86°F).

6. Detection Limit:

   See section VII.A.1.

7. Assay Cut-Off:

   5 µg/mL. See section VII.A.1.

B Comparison Studies:

1. Method Comparison with Predicate Device:

   To evaluate analytical accuracy of the Proov Test, 94 banked native female urine samples (63 negative and 31 positive) were tested using the Proov Test according to the instructions for use and read by three technicians. Frozen aliquots of each sample were evaluated externally using a validated PdG ELISA assay. Results from the Proov Test were compared to results from the ELISA assay. The results are summarized in the table below.

	Proov Test Result	**Low Negative by PdG ELISA (less than -50%)**	**Near Cutoff Negative by PdG ELISA (Between -50% and cutoff)**	**Near Cutoff Positive by PdG ELISA (Between the cutoff and +50%)**	**High Positive by PdG ELISA (greater than +50%)**
Viewer A	Positive	0	4	13	18
	Negative	48	11	0	0
Viewer B	Positive	0	1	12	18
	Negative	48	14	1	0
Viewer C	Positive	0	0	12	18
	Negative	48	15	1	0

Discordant results:

Viewer	Sample Number	PdG ELISA Result (µg/mL)	Proov Test Result
Viewer A	12	4.4	Positive
Viewer A	41	4.6	Positive
Viewer A	66	4.7	Positive
Viewer A	16	4.8	Positive
Viewer B	16	4.8	Positive
Viewer B	46	5.2	Negative
Viewer C	46	5.2	Negative

2. Matrix Comparison:

Not applicable – urine is the only matrix.

C Clinical Studies:

1. Clinical Sensitivity:

Not applicable

2. Clinical Specificity:

Not applicable

3. Other Clinical Supportive Data (When 1. and 2. Are Not Applicable):

Lay User Study

A lay user study was performed with 101 women (ages 18-65) with varying educational backgrounds. Each subject tested one or two specimens (containing 1.25, 2.5, 3.75, 6.25, 7.5, or 8.75 µg/mL PdG) with a Proov Test according to the package insert. A summary of results is presented in the table below:

PdG (µg/mL)	Negative Result	Positive Result	% correctly interpreted
1.25	20	0	100
2.5	20	0	100
3.75	21	0	100
6.25	0	20	100
7.5	0	20	100
8.75	0	20	100

Each lay person was given a questionnaire to assess the readability of the labeling. The results of the questionnaire were found to be acceptable. The readability of the labeling was found to be at the 8th grade level using a Flesch-Kincaid analysis.

D Clinical Cut-Off:

Not applicable

E Expected Values/Reference Range:

Not applicable

VIII Proposed Labeling:

The labeling supports the finding of substantial equivalence for this device.

IX Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.